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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/914,532	08/30/2001	Heiko Maas	213127US0	7833

22850 7590 08/19/2003

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EXAMINER

DANG, THUAN D

ART UNIT PAPER NUMBER

1764

DATE MAILED: 05/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/914,532

Applicant(s)

MAAS ET AL.

Examiner

Thuan D. Dang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If a period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 6-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "the feed mixture" on line 1 of claim 7, "the reacted mixture" on line 6 of claim 6, on line 3 in claim 7, and line 1 of claim 8 lack a clear antecedent basis.

Claim 9, "the reaction" on line 1 is indefinite since it can be understood, the term reaction is referred to the feed or something else.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-4 and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vicari et al (5,49,972) in view of Sanderson et al (5,243,118).

Vicari discloses a process oligomerization of C6 olefins in the presence of a catalyst substantial the same the applicants' claimed catalyst (see the abstract).

Vicari does not disclose that (1) the conversion is selected at from 10-30% by weight (see the whole specification for details) (2) the reaction is carried out adiabatically in a shaft oven, (3) the reaction is essentially a dimerization, and (4) the separation of desired product and recycling the unreacted reactants. However, it is well-known in the art of oligomerization as disclosed by Sanderson that conversion is a parameter which should be selected to optimize the selectivity of the desired oligomers (col. 3, lines 33-55).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Vicari process by selecting an appropriate conversion such as from 10-30% conversion according to the desired oligomer.

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It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Vicari process by carry out the reaction in an adiabatic shaft oven since (1) the condition of a reaction must be selected to optimize the reaction. *In re Aller* 105 USPQ 233, 255 (CCPA 1955) and it has been held that apparatus limitations are given no patentable weight in method claims. *Stalego v. Heymes et al*, 120 USPQ 473; 263 F2d 334. Further it is expected that using any temperature and any apparatus for the Vicari process, provided that the conversion is selected as taught by Sanderson, would yield similar oligomerized product.

It would have been to one having ordinary skill in the art at the time the invention was made to have modified the Vicari process by recovering the desired product and recycling unreacted reactants to obtain a pure product and reducing the cost of raw material.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vicari et al (5,49,972) in view of Sanderson et al (5,243,118) further in view of the English abstract of EP 395857A.

Vicari and Sanderson disclose a process as discussed above.

Neither Vicari nor Sanderson disclose a pretreatment of the feed to remove the poisons of the catalyst in a protective bed. However, the EP abstract discloses that there are recognized poisons to the Nickel catalyst which should be removed from the feed before the oligomerization.

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It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Vicari having been modified the teaching of Sanderson by treating the feed to remove these poisons to increase the lifetime of the catalyst.

Response to Arguments

Applicant's arguments filed 4/17/2003 have been fully considered but they are not persuasive.

The argument that by using a conversion of not more than 30% by weight, deactivation of the catalyst is improved, and the dimer selectivity can be increased and by recycling unreacted reaction mixture after separating off the oligomers, a higher total conversion can be obtained is not persuasive since there is not sufficient evidence to support the applicants' statement in the fifth paragraph on page 2 of the specification. Regarding to the dimer selectivity, considering examples 1 and 2 in the specification, the examiner cannot find out any comparative example (a process has a conversion of larger than 30%) which can be used to compare with the claimed process. Processes in examples 1 and 2 are carried out only at, as argued, a conversion of 20.2 and 19.4%. These processes are not the claimed process which is operated from a BROAD range of conversion of from 10 to 30% of (see claims). Further, except claim 7 (also see the above 112 rejection), applicants does not claim a recycling of unreacted olefinic reactants. Applicants are reminded that it has been established that evidence of unobviousness must be commensurate in scope with the claims. *In re Kulling* 14 USPQ 2d 1056, 1058 (Fed. Cir. 1990); *In re Clemans* 206 USPQ 389 (CCPA 1980); *In re Dill* 202 USPQ 805, 808 (CCPA 1979); *In re Greenfield* 197 USPQ 227 (CCPA 1978); *In re Lindner* 173 USPQ 356, 358 (CCPA 1972); *In re Hyson* 172

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USPQ 399 (CCPA 1972); *In re Tiffin* 171 USPQ 294 (CCPA 1971); *In re McLaughlin* 170 USPQ 209 (CCPA 1971); *In re Kennedy* 168 USPQ 587 (CCPA 1971); *In re Law* 133 USPQ 653 (CCPA 1962).

The argument that by recycling unreacted mixture after separation off the oligomers, a higher total conversion (over 90% together with dimer selectivity over 80%) can be obtained is not persuasive since (also review the above paragraph) the claimed process is not the processes shown in examples 1 and 2 in the specification. Further, as discussed in the above rejection, a high dimer selectivity is a result of steps for recycling of recovered unreacted olefinic feed and selecting of conversion per pass obvious from the applied prior arts.

The argument that applicants have no burden to disprove an evidence of catalyst improvement is not persuasive since if so, it is concluded that the fifth paragraph on page 2 of the specification is only a statement without supporting evidences.

The argument that Vicari does not recognize the nexus between the maximum conversion and the catalyst life and high selectivity of dimers is not persuasive since the rejection is based not only on Vicari itself but Sanderson.

The argument that the monomer feed stocks of Sanderson must contain at least 10 carbon atoms and the catalyst is a sulfated-activated molecular sieves is not persuasive since the teaching cited by the examiner on column 3, lines 33-55 of the Sanderson patent is the nature of oligomerization reaction.

The argument that Sanderson adds nothing to Vicari is not persuasive since Sanderson teaches that there is a relation between the conversion and the selectivity of oligomers. Inspired by this teaching of Sanderson, one having ordinary skill in the art who wishes to obtain a high

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selectivity of a certain oligomer such as dimer and trimer in the Vicari process would obviously select deliberately appropriate conversion to optimize the selectivity of oligomers.

The argument that for examiner's convenience, an experimental report is submitted is not persuasive since these data must be submitted in a proper declaration. Otherwise, a proper consideration of evidence is impossible.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thuan D. Dang whose telephone number is 703-305-2658. The examiner can normally be reached on Mon-Thu.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 703-308-6824. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-5408 for regular communications and 703-305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Thuan D. Dang
Primary Examiner
Art Unit 1764

93914532.3rd
May 18, 2003

A handwritten signature in dark ink, appearing to read 'Thuan D. Dang', is written over the printed name and title. The signature is stylized with a long, sweeping horizontal stroke at the end.